

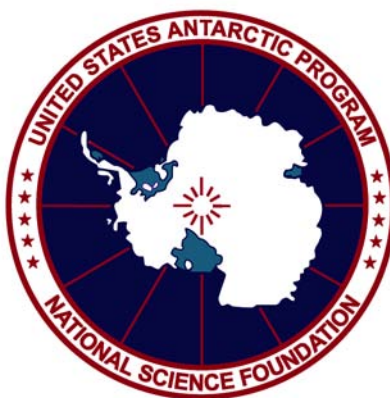


Proposal Preparation Reference Information

Antarctic Research

U.S. Antarctic Research Program

National Science Foundation



Division of Antarctic Sciences
Office of Polar Programs
National Science Foundation

Table of Contents

Table of Contents	2
INTRODUCTION	4
SECTION I.	5
FACILITIES, LOGISTICS, AND SUPPORT	5
Automated data collection	5
Research ships	6
Underway measurements.....	6
Other ships	6
SAMPLES FOR RESEARCH.....	7
DATA FOR RESEARCH AND DATA CURATION.....	7
SECTION II.	9
ANTARCTIC CONSERVATION ACT (ACA) OF 1978	9
Taking native mammals or birds	9
Entering designated special areas.....	10
Introducing species	10
Introducing substances designated as pollutants	10
Discharging designated pollutants	11
Import into and export from the USA	11
Other Requirements	11
Applying to NSF for a permit.....	12
Other permits.....	12
SECTION III.	13
ANTARCTIC OR SOUTHERN OCEAN PROPOSALS INVOLVING FIELDWORK.....	13
Operational Requirements Worksheets	13
Deployment of Scientific Instruments and Equipment	14
Electromagnetic Spectrum Management	15
Information Security Management.....	16
Safety and Health	17

Underwater diving..... 17

Radioactive materials and waste 17

INTRODUCTION

Facilities for research in Antarctica include three year-round research stations with scientific equipment and laboratories, helicopters, ski-equipped airplanes, surface vehicles, a wide array of additional research facilities and temporary (usually summer) camps, and two research icebreakers. These facilities are operated by NSF's [Division of Antarctic Infrastructure and Logistics](#) (703-292-8032) through several support contracts and through agreement with other Federal agencies.

Some useful links that generally describe U.S. Antarctic Program facilities are

- [U.S. Antarctic Program](#) (NSF Fact Sheet)
- [About the U.S. Antarctic Program](#)
- [USAP Science Support](#)

The material in this document supplements the information in the Antarctic Research solicitation and is provided to assist proposers in developing their proposals for Antarctic research. Additional information can be found on [USAP.gov](#)

SECTION I.

FACILITIES, LOGISTICS, AND SUPPORT

The U.S. Antarctic Program includes many organizations that provide logistical and operational support to meet the needs of the field research program. NSF's prime Antarctic logistics contractor is Raytheon Polar Services Company (RPSC) of Centennial, Colorado. RPSC coordinates research support and field operations in Antarctica and has a planning group that can provide advice to investigators with questions about field or logistical support. Investigators are strongly encouraged to contact the RPSC Science Planning Group with questions during the proposal preparation phase. (For additional information, contact Jessie Crain, OPP/AIL, (703) 292-7457, fax: (703)292-9080, email: jlcrain@nsf.gov)

Other organizations offer special technical support for research, and your proposal must include a summary document from that organization in the supplemental documents section. More detailed descriptions of the research support provided by the organizations below is available on [USAP.gov](http://www.usap.gov) at

<http://www.usap.gov/usapgov/proposalInformation/contentHandler.cfm?id=1750>.

- **UNAVCO** (http://facility.unavco.org/project_support/polar/polar.html): High-precision GPS and LIDAR support
- **Alaska Satellite Facility** (<http://www.asf.alaska.edu/>): Synthetic Aperture Radar (SAR) data
- **Ice Drilling Program Office (IDPO) and Ice Drilling Design and Operations Group (IDDO)** (<http://icedrill.org/>): Ice core drilling services. Contact IceDrill@Dartmouth.edu
- **Antarctic Geospatial Information Center, the University of Minnesota** (<http://www.agic.umn.edu/>): Creates, collects, distributes and archives geospatial information about Antarctica
- **University-National Oceanographic Laboratories Systems (UNOLS)** (<http://www.unols.org/>): Ship-board research support. Requests for vessel support must be submitted using the UNOLS Ship Time Request System (https://strs.unols.org/public/diu_login.aspx). When the request is submitted, a PDF file will be printed and this can be submitted as part of the supplemental documents in your proposal.
- **IRIS (Incorporated Research Institutes for Seismology)** maintains seismic monitors as part of a long term study of seismicity at Palmer and South Pole Stations. (<http://www.iris.edu/hq/programs/gsn>)

Automated data collection

The U.S. Antarctic Program supports various automated data collection programs. These are

- **Automated geophysical observatories (AGOs)** for unmanned collection of data at remote locations (<http://space.augsburg.edu/ago/index.html>)
- **Automatic weather stations (AWSs)** at locations in Antarctica for research and operations. (Maintained by the University of Wisconsin: <http://ice.ssec.wisc.edu/>).
- **Global Monitoring Division of NOAA's Earth System Research Laboratory** measures at South Pole Station long-term trends of important trace gases, aerosols, and solar radiation and investigates the influence of these gases and aerosols on

the Earth's climate. The program is supported by USAP (<http://www.esrl.noaa.gov/gmd/obop/spo/observatory.html>).

- **IRIS (Incorporated Research Institutes for Seismology)** maintains seismic monitors as part of a long term study of seismicity at Palmer and South Pole Stations. It is part of part of the IRIS Global Seismographic Network (GSN), a 150+ station global network. (<http://www.iris.edu/hq/programs/gsn>)

Research ships

Investigators that require time on an ice-capable research vessel should consult the vessel operating schedules at <http://usap.gov/calendarsAndSchedules/> or the relevant program director in Antarctic Sciences to determine availability of ship time beyond 2010. All investigators that request ship time must fill out a UNOLS ship request form.

The U.S. Antarctic Program operates two research ships - the 230-foot *Laurence M. Gould* and the 308-foot *Nathaniel B. Palmer*. The capabilities of research ships can be found on [Marine Operations](#) home page on the U.S. Antarctic Program web site, USAP.gov.

Underway measurements

Instruments on *Nathaniel B. Palmer* and *Laurence M. Gould* are available for not-to-interfere underway measurements on behalf of investigators who do not join a cruise. The "Vessel Science Operations" page

(<http://www.usap.gov/usapgov/vesselScienceAndOperations/index.cfm?m=3>) on U.S.

Antarctic Program web portal links to complete lists of available scientific equipment on board the *Nathaniel B. Palmer*

(<http://www.usap.gov/USAPgov/vesselScienceAndOperations/documents/ScienceSystems.pdf>) and the *Laurence M. Gould*

(http://www.usap.gov/USAPgov/vesselScienceAndOperations/documents/LMG_ScienceSystems.pdf).

Both vessels were designed to accommodate biological, oceanographic, geological, and geophysical experiments. Research equipment includes a seismic system, a portable radioisotope laboratory, and dedicated oceanographic instrumentation (e.g., CTD). Both vessels have a deep sea trawl winch and hydrographic winches, cranes, an interior staging area with telescoping side boom, and starboard and aft A-frames. Both vessels also have satellite navigation, radar, and precision depth recorders.

Proposals for management of long-term measurements and data archiving will be considered by the cognizant program director. Technician staffing and other shipboard support should be identified both in the proposal and on the appropriate research ship worksheet.

Other ships

University-National Oceanographic Laboratory Systems (UNOLS) ships operate in the Southern Ocean in some years (<http://www.unols.org/>). In addition, ships that provide operational support near McMurdo may be able to provide underway research support in the Southern Ocean and the Ross Sea. Contact Jessie Crain, (703) 292-7457, fax: (703)292-9080, email: jlcrain@nsf.gov, the cognizant program director in NSF's Office of Polar Programs to discuss potential use of operational support vessels. Research ships of other

Antarctic Treaty nations operate in Antarctic waters; see "Non-U.S. facilities; international cooperation".

SAMPLES FOR RESEARCH

Specimens collected in the Antarctic are available to qualified investigators for study. For information, including the policies and procedures for obtaining samples, contact the facilities listed below. Detailed descriptions of these facilities are available on the "Information for Proposers" page (<http://www.usap.gov/proposalInformation/>) on [USAP.gov](http://www.usap.gov)

- **U.S. National Ice Core Laboratory** - supported by NSF-OPP and the USGS- Geological Division, (<http://www.nicl-smo.sr.unh.edu/>),
- **Antarctic Marine Geology Research Facility, Florida State University** - Ocean-bottom sedimentary cores and grab samples; continental cores (<http://www.arf.fsu.edu/>)
- **United States Polar Rock Repository, Byrd Polar Research Center, Ohio State University** - Rock samples from Antarctica and the Arctic (<http://bprc.osu.edu/emuwebusprrr/pages/usprrr/Query.php>)
- **Meteorites from Antarctica, NASA, Johnson Space Center** - Meteorite samples (<http://www-curator.jsc.nasa.gov/antmet/index.cfm>) You must adhere to U.S. regulations governing the collection and curation of Antarctic meteorites. These regulations are published on the NSF web site at http://www.nsf.gov/od/opp/antarct/meteorite_regs.jsp.
- **Department of Invertebrate Zoology, Smithsonian Institution** - Biological specimens of Antarctic benthic invertebrates, plankton, algae, and fish collected by U.S. Antarctic Program researchers. (<http://nhb-acsmith1.si.edu/emuwebizweb/pages/nmnh/iz/Query.php>.)

DATA FOR RESEARCH AND DATA CURATION

Detailed descriptions of the following facilities are available on the "Information for Proposers" page (<http://www.usap.gov/proposalInformation/>) on [USAP.gov](http://www.usap.gov).

- **U.S. Antarctic Data Coordination Center** - U.S.-funded Antarctic data for the international Antarctic Master Directory (<http://www.usap-data.org/>)
- **U.S. Antarctic Resource Center (USARC), U.S. Geological Survey** - A comprehensive collection of Antarctic maps, charts, satellite images and photographs (<http://usarc.usgs.gov/>)
- **Antarctic Geospatial Information Center, the University of Minnesota** - Creates, collects, distributes and archives geospatial information about Antarctica (<http://www.agic.umn.edu/>)

- **Antarctic Multibeam Synthesis Data Portal** - Bathymetric and other oceanographic data and cruise metadata (<http://www.marine-geo.org/antarctic/>)
- **Antarctic Bibliography** - Research literature concerning Antarctica back to 1951 from around the world (<http://www.coldregions.org/>)

SECTION II.

ANTARCTIC CONSERVATION ACT (ACA) OF 1978

Public Law 95-541, the Antarctic Conservation Act of 1978 as amended by Antarctic Science, Tourism and Conservation Act of 1996 (Public Law 104-227), requires your involvement from the time you write a proposal to the time you leave Antarctica.

The law protects native mammals, birds, and plants and their ecosystems. The law applies to all U.S. citizens, whether or not they go to Antarctica with the U.S. Antarctic Program. It applies to all expeditions to Antarctica that originate from the United States.

The Act makes it unlawful, unless authorized by permit -

- to take native mammals, birds, or plants; including harming associated ecosystems
- to engage in harmful interference
- to enter designated special areas
- to introduce species
- to introduce substances designated as pollutants
- to discharge designated pollutants
- to import certain Antarctic items into the USA

The Act provides penalties of up to \$11,000 and 1-year imprisonment for each violation. Other penalties could include removal from Antarctica, rescission of a grant, or sanctions by your employer.

The book *Antarctic Conservation Act of 1978 (Public Law 95-541), with Regulations, Management Plans With Maps for Special Areas, Permit Application Form, and Protocol on Environmental Protection (NSF 01-151)* is free from NSF or available online at <http://www.nsf.gov/od/opp/antarct/aca/nsf01151/start.jsp>.

The most current information on Antarctic Specially Protected Areas (ASPAs) and Antarctic Specially Managed Areas (ASMAs) is maintained by the Committee for Environmental Protection (CEP), which consists of representative from all Parties to the Protocol on Environmental Protection to the Antarctic Treaty. Detailed descriptions of sites, maps, and management plans are available at http://www.ats.aq/e/ep_protected.htm.

The following paragraphs discuss major provisions of the Antarctic Conservation Act, which is the U.S. law implementing adherence to the international Protocol on Environmental Protection to the Antarctic Treaty.

Taking native mammals or birds

It is unlawful, unless authorized by permit, to take Antarctic native mammals, birds, or plants. To *take* means to remove, harass, molest, harm, pursue, hunt, shoot, wound, kill, trap, capture, restrain, or tag a native mammal or bird or to try to do so.

If you are on the sea ice near McMurdo and try to hustle a Weddell seal into position for a photograph, you are breaking the law. If you are an ornithologist with a grant to band giant petrels, you may not do so until you apply for and receive a permit. A grant and a permit

are two different things. See the "Applying for a Permit" section of this solicitation for more information.

Entering designated special areas

A number of precisely defined places in Antarctica are designated under the Antarctic Treaty, and in the U.S. law, as Antarctic Specially Protected Areas. You must have a compelling need to enter one of these areas, and you must have a permit to do so.

Some of these special areas are near stations, such as Arrival Heights next to McMurdo Station or Litchfield Island near Palmer Station. Other special areas like the Linnean Terrace are in remote locations in which geologists, for example, may want to work. Maps, and management plans for these sites are available at http://www.ats.aq/e/ep_protected.htm.

Introducing species

Introducing non-indigenous species to Antarctica (*i.e.*, south of 60°S latitude) generally is prohibited. However, if your work requires it, a permit may be issued for the following species under controlled conditions:

- domestic plants
- laboratory animals and plants including phytoplankton, viruses, bacteria, yeast, and fungi

Living non-indigenous species of birds may not be introduced into Antarctica.

If you are uncertain whether the species you want to take to Antarctica is considered an introduced species, please contact the polar environmental officer at NSF (Polly Penhale at ppenhale@nsf.gov).

Introducing substances designated as pollutants

The Antarctic Conservation Act regulates what types of materials can be taken to Antarctica and specifies how these materials must be used, stored, and disposed of.

Banned substances. These substances are banned from Antarctica:

- pesticides (except those required for science or hygiene: a permit is needed)
- polychlorinated biphenyls (PCBs)
- nonsterile soil
- polystyrene beads and plastic chips

Designated pollutants. Designated pollutants include any substance listed by name or characteristic (flammable, corrosive, reactive, toxic) in the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, and other U.S. regulations. Waste containing designated pollutants is *Antarctic hazardous waste*, and it has to be used, stored, and disposed of in controlled ways.

Many research and industrial supplies - and common substances like lighter fluid and fingernail polish remover - at U.S. Antarctic stations are designated pollutants. Designated pollutants must be *permitted* to enter Antarctica. NSF's prime Antarctic support contractor

annually compiles an application for a master permit to cover common items. The task obviously requires the cooperation of grantees; this chore is part of preparing for research in Antarctica.

At the proposal stage, it is enough to think about how to *minimize* the types and amounts of substances you need, to *substitute* benign substances for designated pollutants wherever possible, and to *handle* the designated pollutants that you must take. In the proposal and, if you get a grant, in your later dealings with the prime Antarctic support contractor, err on the side of *disclosure*. In the proposal's *Operational Requirements* package (see section with this title below), use the worksheet to list major amounts of waste you expect to generate.

Discharging designated pollutants

Some categories of waste must be removed from Antarctica. The list includes radioactive materials, batteries, fuel, heavy metals, lubricants, treated timbers, plastic (except low density storage bags), solid noncombustibles, and drums that held oil or chemicals.

The U.S. Antarctic Program employs specialists to handle and remove designated pollutants in accordance with the regulations. Grantees receive assistance and instructions in the Antarctic, but are required to keep track of the designated pollutants they use, to sort and store them according to instructions provided, and to turn the waste over to U.S. Antarctic Program officials in accordance with specified procedures.

Open burning is prohibited in Antarctica. If your proposal will include the operation of a remote field camp, plan to haul all your trash back to the station or ship from which you began your sortie.

Import into and export from the USA

In the United States it is unlawful, unless authorized by regulation or permit, to have or sell or to import or export native mammals, birds, or plants. An application for a permit must demonstrate that the import or export would further the purposes for which the species was taken or collected, demonstrate that the import or export is consistent with the purposes of the Antarctic Conservation Act, and provide other details that are needed for evaluation of the permit application.

Mailing items to or from the United States constitutes import or export.

Other Requirements

Mineral samples for scientific purposes normally may be collected and removed from Antarctica without an Antarctic Conservation Act permit. However, the Act requires a permit for "any activity that results in the significant adverse modification of habitats of any species or population of native mammal, bird, plant, or invertebrate." The Antarctic Protection Act of 1990 (Public Law 101-594) states, "it is unlawful for any person to engage in, finance, or otherwise knowingly provide assistance to any Antarctic mineral resource activity."

Meteorites. A [U.S. regulation governing Antarctic meteorites](#) ensures that meteorites in Antarctica will be collected for scientific research purposes only. U.S. expedition organizers who plan to collect meteorites in Antarctica will ensure that any specimens collected must be properly collected, handled, documented, and curated to preserve their scientific value.

Applying to NSF for a permit

If NSF funds your proposal, an Antarctic Conservation Act [permit](#) may be required for the proposed activities. You are the person who initially decides if a permit is needed. If there is any doubt, contact an Office of Polar Programs science program director, the permit officer (Nadene Kennedy, nkennedy@nsf.gov), or the environmental officer (Polly Penhale, ppenhale@nsf.gov).

If a permit appears necessary, send the *Antarctic Conservation Act Application and Permit Form* to the National Science Foundation at the address shown on the permit. Be sure NSF gets it no later than 90 days before fieldwork is to start. During the 90 days, a summary of your application is published in the *Federal Register*, and the public is given 30 days to comment on it. The Foundation evaluates the public comments and performs an internal review. It then approves the application, approves it with modifications, or denies it. NSF will not allow work in Antarctica until a permit either has been approved and issued or is found to be not required. You may not conduct research or other activities that require a permit unless you have a permit. An application cannot be made retroactive.

Other permits

Additional permits may be required for certain activities, such as research involving marine mammals or importation of bird or mammal tissue, plants or soils. Please contact the environmental officer for additional information.

SECTION III.

ANTARCTIC OR SOUTHERN OCEAN PROPOSALS INVOLVING FIELDWORK

Prior to submitting a proposal, PIs are advised to check the availability of vessel and airborne assets on the USAP website to ensure that these assets are not already committed for the time period requested in the proposal. PIs also are advised that, because the R/V *N.B. Palmer* charter expires in 2012, vessel availability after that time may be limited. However, NSF is reviewing options for maintaining research capabilities in the Antarctic Peninsula region and welcomes proposals to conduct the type and scope of research currently supported by the R/V *Laurence Gould*.

Some useful links on the USAP.gov are

- [Information for Proposers](#)
- [Special Technical Support](#)
- [Samples and Data for Research](#)
- [Logistics](#)
- [Vessel Science and Operations](#)

Operational Requirements Worksheets

Proposed fieldwork must be described in the proposal at a level of detail sufficient for merit review. To determine field support needs, and to help estimate costs and feasibility, proposers must submit an Operational Requirements Worksheet (ORW) via POLAR ICE (<http://www.usap.gov/scienceSupport/polarice/>).

The ORW captures details about the field support requirements, some of which may not pertain to merit review, but are critical to feasibility analysis. For this reason, a summary ORW will be produced from information provided by the proposer as part of completing the full ORW. This action by the contractor does not constitute NSF approval. This summary will be available to reviewers, however, the full ORW will not.

If a proposal appears likely to be supported, NSF's prime Antarctic support contractor will solicit details that will expand on and refine the ORW. Prior to award, the support contractor will work with you to develop an operational notification, which details the level of logistics support that NSF will provide for your project. This action by the contractor does not constitute NSF approval. If your proposal is awarded, you will also be asked to provide a Support Information Package (SIP) that builds on the ORW and operational notification. (<http://www.usap.gov/scienceSupport/polarice/>).

The following instructions describe the process of submitting the summary and full ORW:

FastLane proposals:

- Prepare, but **do not yet submit**, the proposal in FastLane.

- Log on to POLAR ICE, and apply for a new account. You will be issued a password within one business day.
- Fill out the *Operational Requirements Worksheets* (ORW). Please note that if your proposal is recommended for an award, your ORW will be used to define your field program.
- Use POLAR ICE to produce PDF versions of a summary ORW and the completed full ORW.
- Upload the summary ORW as a *Supplemental Document* and the full ORW as a *Single Copy Document* through FastLane, and submit the proposal to NSF. Please note that reviewers will not have access to the full ORW file, so fieldwork information required for merit review must be included in the proposal's *Project Description*. Although reviewers will see the summary ORW, the information in this document augments the fieldwork information in the Project Description.
- Log back into POLAR ICE and follow the instructions for providing the NSF proposal number.

Grants.gov proposals:

- Prepare, but do not yet submit, the proposal in Grants.gov.
- Log on to POLAR ICE, and apply for a new account. You will be issued a password within one business day.
- Fill out the Operational Requirements Worksheets (ORW). Please note that if your proposal is recommended for an award, your ORW will be used to define your field program.
- Use POLAR ICE to produce PDF versions of a summary and the completed full ORW.
- The summary ORW should be attached as a supplementary document in Field 11 of the R&R Other Project Information Form. Attach the ORW as a Single Copy Document to the "National Science Foundation Grant Application Cover Sheet" at item 6, "Additional Single Copy Documents." After attaching both documents, submit the proposal. Please note that reviewers will not have access to the full ORW file, so fieldwork information required for merit review must be included in the proposal's *Project Description*. Although reviewers will see the summary ORW, the information in this document augments the fieldwork information in the Project Description.
- The proposer will receive a confirmation message from NSF within 60 hours of submission of the proposal via Grants.gov. When you have received your NSF proposal number, log back into POLAR ICE and follow the instructions for providing the NSF proposal number.

Deployment of Scientific Instruments and Equipment

NSF's goal for scientific instruments and equipment deployed in Antarctica is to maximize the likelihood of successful operation within the operating parameters of the U.S. Antarctic Program (USAP).

This will be achieved through proper development and engineering tests before deploying a new or existing piece of equipment. Proper testing will help ensure that precious field resources are devoted to activities that are field ready and can only be done or are best done in the Antarctic. This principle applies to both development of new and modification of existing instruments and equipment. It also applies to proposals for

Antarctic fieldwork submitted to programs outside the Division of Antarctic Sciences, such as proposals considered under the Major Research Instrumentation (MRI) program and proposals considered jointly with other Divisions.

Scientific instruments and equipment are expected to function in very harsh environmental conditions, especially if deployed over the austral winter, and also must be immune to damage that could occur during shipment to the field or during the conduct of fieldwork. Deploying people, equipment, and instruments to Antarctica is very expensive. Instruments and equipment must be developed with due consideration of power, communications, space, ease of deployment, and other technical support needs, as well as consideration of potentially detrimental effects of electromagnetic interference (EMI). Furthermore, all computers, instruments, and equipment that will be connected to the USAP IT network must conform to U.S. Government Information Security requirements.

For all scientific instruments and equipment, and particularly for those intended for use at South Pole Station, NSF will carefully review EMI aspects as part of the environmental review process and may conduct additional technical review. NSF will require development of an operating schedule for any transmitting equipment. All new transmitters should expect to operate in a half-time mode for at least one year. This means that transmitters should be off for a period of at least a minute, and on for a similar time interval. Coordination of transmission schedules across all experiments will be done, but deviations from a set schedule to observe particular events can be considered. This will enable sensitive receiving experiments to divide their respective data sets into “transmitter on” and “transmitter off” intervals that have meaningful statistical weight. Proposers should review recommendations of the South Pole Users Committee, EMI Subcommittee Report available at <http://www.usap.gov/conferencesCommitteesAndWorkshops/userCommittees/sctnSPUC.cfm>

Proposals should include plans for instrument and equipment development, addressing appropriate resource and EMI issues described above, to make a compelling case that the work is justified. A proposed budget and schedule should also be developed.

The Operational Requirements Worksheets developed in POLAR ICE should include:

1. A summary of the proposed plan that illustrates the process of development, test, and acceptance before shipping to Antarctica;
2. A plan for deployment and operation of the instrument or equipment;
3. A plan for a field readiness review appropriate to the project;
4. For South Pole research, in particular, where living space, power, and communication bandwidth are at a premium, detailed information about the support resources needed, any timing or schedule issues, and information related to evaluation of EMI are critical; and
5. Information that would help USAP support planners to understand where there may be flexibility in the proposed plan. This information should be developed on the POLAR ICE application's web site (<http://www.usap.gov/scienceSupport/polarice/>).

Electromagnetic Spectrum Management

Deployed science field programs that require the use of radio spectrum must coordinate their requirements with USAP Spectrum Manager, a service provided to NSF by the U.S.

Navy.

All systems to be introduced into Antarctica that intentionally emit radio frequency energy must be registered with the USAP Spectrum Manager and undergo a spectrum conflict coordination process to minimize the potential of interference with existing systems. A proposed system may be required to change its design parameters, operating location, or time of operation to address potential interference concerns. Please note that no distinction is made relative to FCC (or other national spectrum authority) designations for spectrum or type acceptance. All emitting systems must be coordinated via the registration process, including unlicensed national information infrastructure (UNII) bands.

Systems introduced into Antarctica that are passive in their use of the radio frequency spectrum, other than GPS, are also required to register with the USAP Spectrum Manager. By registering a system, potential interference from previously approved instrumentation can be identified and options for corrective action can be taken to allow time to implement engineering design, operational concept, or configuration changes for either system involved. Additionally, registration of passive systems provides a greater measure of protection from any future conflicts with transmission systems.

Spectrum management coordination is implemented via the POLAR ICE, both in the Operational Requirements Worksheet and Support Information Package phases (<http://www.usap.gov/scienceSupport/polarice/>).

If you have questions, contact Patrick Smith (pdsmith@nsf.gov) in OPP's Antarctic Infrastructure and Logistics Division.

Information Security Management

United States statute law and Executive Office of the President guidance regarding information security requirements for Federal information systems apply to the information technology (IT) infrastructure of the USAP.

All grantee scientific research instrumentation, personal computing devices (e.g., laptop computers), and remote interactions from home institution computing/networks to systems within the USAP general network infrastructure (i.e., within the usap.gov domain) must comply with NSF/USAP information security requirements. Compliance is mandatory.

Federal information security guidance and requirements are constantly evolving. It is impractical to capture specific requirements in this document. Specific requirements for information security compliance are gathered and assessed via the POLAR ICE operational requirements worksheet, support information package, and on-going USAP science support process. USAP information security policy, guidance instructions, advisories, and other related information can be found on the USAP web portal on the USAP Information Security Program homepage (<http://www.usap.gov/technology/contentHandler.cfm?id=1562>).

If you have questions, contact Patrick Smith (pdsmith@nsf.gov) in OPP's Antarctic Infrastructure and Logistics Division.

Safety and Health

A project that involves work in Antarctica must consider aspects of the research that may pose safety and health risks. Current U.S. Antarctic Program policies regarding safety and health are consistent with U.S. laws and regulations affecting research in the USA.

Office of Polar Programs safety and health specialists will review your proposal and operational requirements carefully. They have found that most proposed Antarctic research can be carried out without undue risk. However, advance planning is essential, often in collaboration with the proposer. Your full and careful attention to safety and health aspects will help to make the planning efficient and effective. During review you may be asked for more information.

While USAP operates a comprehensive field safety program in Antarctica, this training is very general in nature and is not a substitute for specialized field safety training. If you are proposing to work in hazardous field locations, you should plan and budget for appropriate field team expertise, including, as needed, field safety guides.

Grants are made only if questions regarding a project's safety and health risks can be resolved. The Office of Polar Programs has staff that are assigned full time responsibilities in safety and health. Please feel free to contact them (see [roster](#)) during proposal preparation.

Underwater diving

The U.S. Antarctic Program supports a scientific diving program similar to those of institutional members of the American Academy of Underwater Science. Scientific divers are expected to comply with guidelines in the Antarctic Scientific Diving Manual (NSF 99-22), available from the support contractor's dive coordinator (1-800-688-8606). Funded researchers intending to conduct underwater diving in support of their research will be asked to document their dive plans and diver credentials (including polar diving experience). The proposal should include plans and budget information appropriate for the diving activity. In rare situations, the support contractor may be able to provide limited diving assistance. Contact the appropriate Program Director with questions.

If your proposed research involves underwater diving, check the appropriate box on the Diving worksheet in POLAR ICE. If your proposal receives funding, you will be asked to complete worksheets detailing your diving plans and the credentials of your dive team for review and approval by NSF. Only approved dive plans and divers will be authorized to dive in Antarctica. Your organization's Diving Safety Officer must endorse your request to engage in scientific diving in Antarctica.

Radioactive materials and waste

If you wish to use low-level radioactive materials (open or sealed sources) in Antarctica, you need to do so under your organization's radiation use license and with the approval of NSF. Budget for this in your proposal, buy the materials through your organization, and register as a radioisotope user with your radiation safety committee. You also must abide by any additional requirements imposed by NSF, in particular radioactive waste generation and packaging criteria for proper disposal of low-level radioactive waste generated during the research.

If your research involves use of low-level radioactive materials in Antarctica (open or sealed sources), complete the Radioactive Materials worksheets in POLAR ICE. Investigators who have completed that worksheet will receive an additional questionnaire, after the proposal

has been funded, requesting details of their proposed radioisotope usage. Proposed use of radioisotopes must to be consistent with your organizational license and NSF policies. Your Radiation Safety Officer will be required to endorse your plans to use radioisotopes in Antarctica. Following this endorsement, your request must still be approved by NSF Safety and Health Staff.